

# Universal Trail Assessment Process (UTAP) & High Efficiency Trail Assessment Process (HETAP)

## Coordinator Workshop



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# Introductions

Name

Where are you from

Who do you work for/represent

Why UTAP Interest

What do you hope to gain

# Workshop Goals

Know the development of UTAP and  
HETAP (High Efficiency Trail  
Assessment Process)

Understand UTAP concepts, benefits  
and measurement techniques

# Workshop Goals

Use UTAP and HETAP for diverse environments and objectives

Obtain practical experience

Perform and lead assessments

# Workshop Topics

## Morning

Introductions &  
Overview

Tool Function

Measurements

Application of  
UTAP/HETAP

## Afternoon

On-Trail Practical

Data Analysis & Use

Debrief, Review &  
Questions

Certification Process

# Greatest Barrier to Outdoor Facility and Trail Use

Lack of knowledge about actual on-site conditions or about where access is possible



# Need for Trail Assessment

All users and land managers need accurate trail data



Objective trail information is very limited, but it enables informed decisions about trail use and conservation

Subjective information is not related to individual abilities

# Trail Assessment Options

Universal Trail  
Assessment  
Process (UTAP)



High Efficiency  
Trail Assessment  
Process (HETAP)



# UTAP & HETAP Generate Objective Information

Access and Use

Construction and Maintenance

Mapping and Interpretation

Environmental Protection and  
Management

Compliance with Design Standards

# Assessment and Compliance

Inventory existing facilities and infrastructure – Asset Management

Determine compliance with existing ABA for Developed Outdoor Recreation facilities

Create transition plan with goals and objectives for accomplishing access

# Universal Design

Philosophy that designs for all potential users to the greatest extent possible

Principles include:

- equitable use
- flexible use
- simple & intuitive use
- perceptible information
- tolerance for error
- low physical effort
- size and space for approach and use

# **UTAP Research & Development Project of Beneficial Designs, Inc.**

Funded by the National Center for  
Medical Rehabilitation Research in the  
National Institute of Child Health and  
Human Development at the National  
Institutes of Health SBIR Grant #R44  
HD29992-03

# UTAP Development Partners

Bureau of Land Management (DOI)

Bureau of Reclamation (DOI)

National Park Service (DOI)

US Army Corps of Engineers

US Fish & Wildlife Service (DOI)

US Forest Service (USDA)

# UTAP Development Partners

American Trails

California State Parks

Minnesota Department of  
Natural Resources

National Center on Accessibility

Wilderness Inquiry

# Key Variables for UTAP

Measured many trail factors

Matched objective variables with  
user expectations and experience

Matched objective  
variables with  
trail experts and  
their knowledge  
of trail



# Relation to User Perceptions

Users of all abilities view trail information  
before hiking

Expectations  
prior to trail  
use

Experience  
after trail use



# UTAP Research Results

Identify key variables

Validity

Repeatability

Relation to user perceptions

# Validity of UTAP/HETAP

Measure & record in 2 foot intervals

Calculate trail access information

Expert review of information accuracy

Typical grade & cross slopes within 1%



# Repeatability of UTAP/HETAP

Same UTAP leader, different days

Same UTAP leader, different years

Different UTAP leader, same day

All comparisons were repeatable except  
washouts or landslides

Storm damage recorded as features  
and maximum cross slopes

# UTAP Tools



**What types of information  
do you display for your  
trail?**

# Key UTAP & HETAP Information

Length



Grade

Surface

Features & Facilities



Width



Cross  
slope



HETAP and UTAP is suitable for any trail or path of travel in an outdoor environment.

**What are different types of trails?**

# Shared Use Path



# Urban Shared Use Paths



# Neighborhood Connector Trails



# Recreation Trail (Front Country)



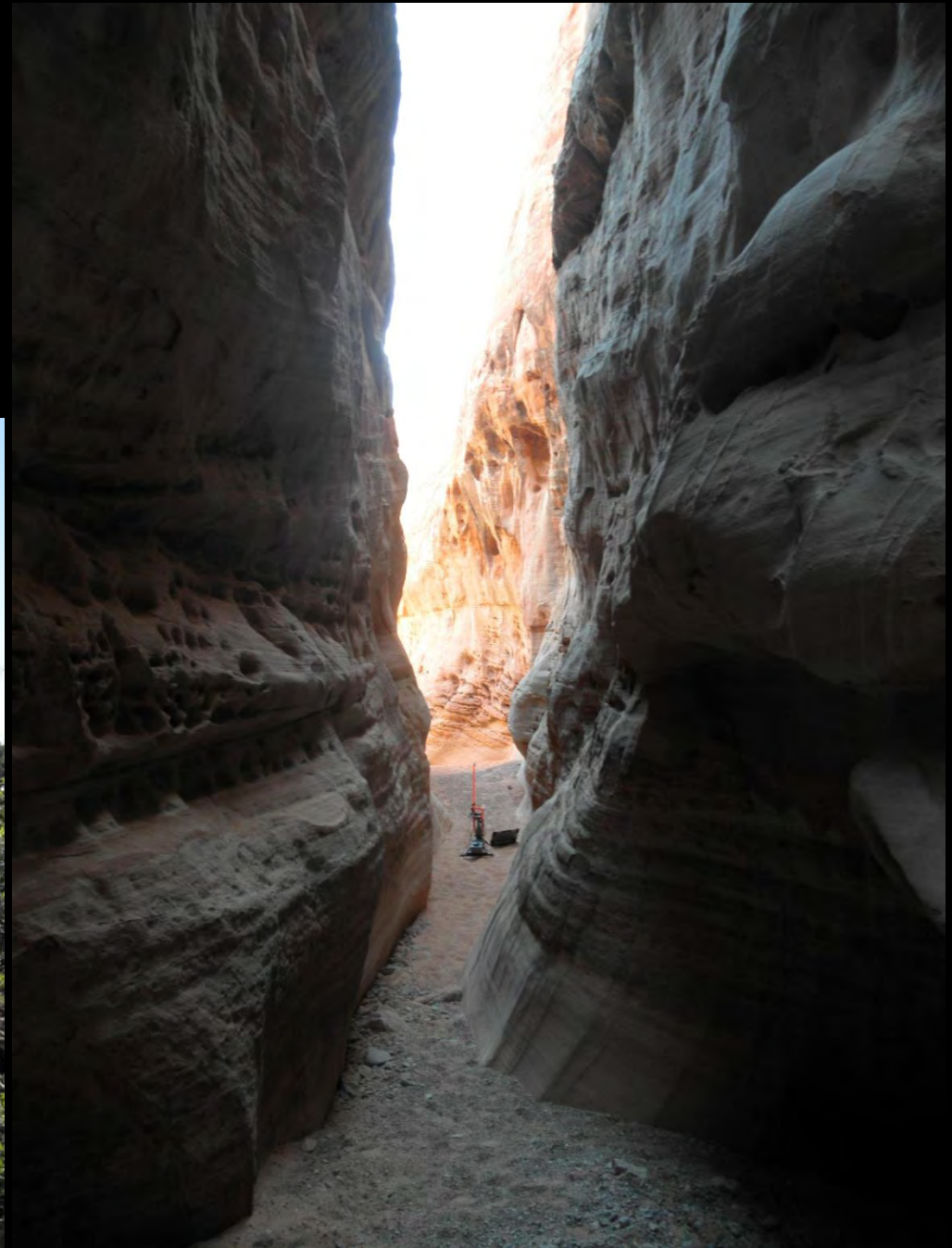
# Front Country Trails



# Recreation Trail (Back Country)



# Narrow Trails



# Backcountry single track trails



# Cross Country Trails



# Snowshoe Trails



# Snowmobile Trails



# State Parks/Day Use Areas



# Motorized Trails



# Outdoor Recreation Access Route (ORAR)



# Paths of Travel at Recreation Facilities



# UTAP Records Typical and Extreme Values

Grade

Cross Slope

Width

| <u>Trail</u>  | Grade (%)  |            | Cross Slope (%) |            |
|---------------|------------|------------|-----------------|------------|
|               | <u>Typ</u> | <u>Max</u> | <u>Typ</u>      | <u>Max</u> |
| Kersey Lake   | 5          | 70         | 11              | 32         |
| Indiana Falls | 8          | 10         | 16              | 19         |

# Surface

Firmness Category  
Surface Type



# Features and Facilities

Location

Type

Description

Dimensions

Quantity



# Feature Example



Scenic  
Viewpoint

# Feature Examples

| <u>Feature</u> | <u>Dist</u> | <u>Zone</u> | <u>Size</u> | <u>Rem.</u> |
|----------------|-------------|-------------|-------------|-------------|
| Rock           | 50          | TB          | 11x23x7     | 48          |
| Rock           | 60          | TB          | 10x23x6     | 17          |
| Rock           | 70          | VF          | 11x22x8     | n/a         |
| Rock           | 5020        | TB          | 12x22x7     | 12          |

# Trail Access Information (TAI) to Convey to Users

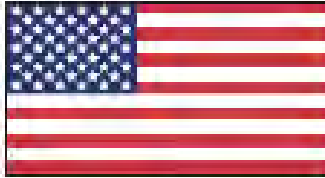
Grade

Cross Slope

Tread Width

Surface


Obstructions





### Ruins Loop


Fort Churchill  
State Historic Park


Length 0.6 mi (1.0 km)


 Hikers

 Bikes

 Dogs OK

 Equestrians

 No Motorized Vehicles


 Grade

Typical Grade 2.6%

8% of the trail is 5% to 12%

23 ft (7 m) is 12% to 17%

8% grade is a standard ramp


 Cross Slope

Typical Cross Slope 5.9%


13% of the trail is 10% to 15%

455 ft (139 m) is 15% to 28%

8% grade is a standard ramp


 Tread Width

Typical 19 in (48 cm)  
Minimum 12 in (31 cm)


 Surface


Soil  
3% of the trail is Soft

Typical Firmness (In) 0.21  
Minimum Firmness (In) 0.32



Typical Stability (In) 0.54  
Minimum Stability (In) 1.03




 Obstructions

Multiple 6 in (15.2 cm) Rocks

**WARNING:** Trail conditions may have changed since January 2020 when this trail was assessed. Temporary obstacles were not mapped.

Signage created by Intermodal Design, Inc. using data collected by a certified trail assessment coordinator.

 Trail Access Information



**Dune Trek**  
Dune Trek Trailhead

**Length:** 2.4 mi (3.9 km)  
**Difficulty:** Easy  
**Season:** Year-round  
**Trail Type:** Hike, Run, Bicycles, Horseback, Wheelchair

**Notes:**  
- No Pets  
- No Alcohol  
- No Smoking  
- No Firearms  
- No Hunting  
- No Camping  
- No Campfires  
- No Campsites  
- No Campsites  
- No Campsites

**Grade:**  
Normal Grade: 0-2%  
Steepest Grade: 2-5%  
Avg. Grade: 1-3%  
Steepest Grade: 2-5%  
Steepest Grade: 2-5%

**Cross Slope:**  
Normal Cross Slope: 0-2%  
Steepest Cross Slope: 2-5%  
Avg. Cross Slope: 1-3%  
Steepest Cross Slope: 2-5%  
Steepest Cross Slope: 2-5%

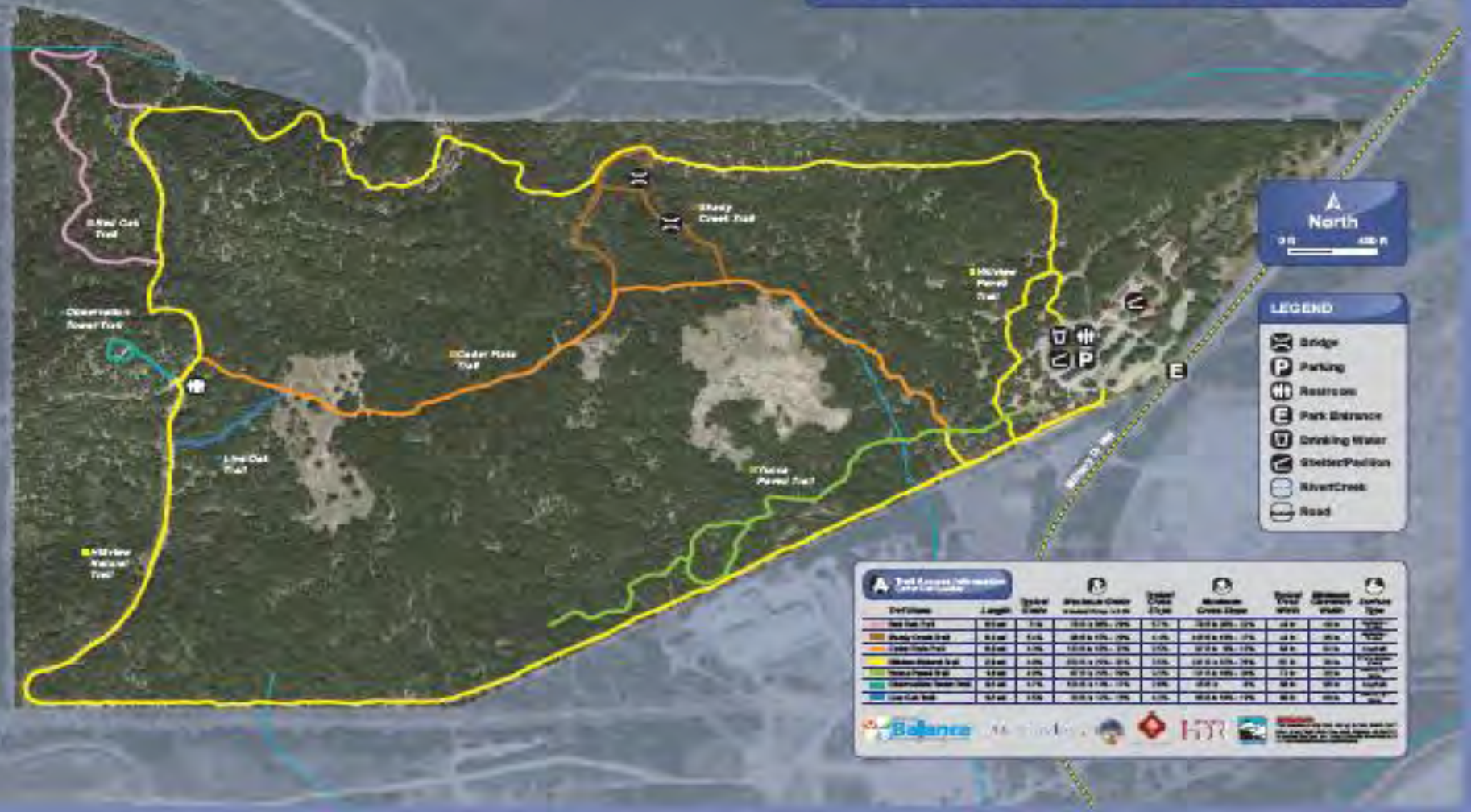
**Tread Width:**  
Normal: 36 in (91 cm)  
Steepest: 36 in (91 cm)

**Surface:**  
Normal Surface: Sand  
Steepest Surface: Sand  
Avg. Surface: Sand  
Steepest Surface: Sand  
Steepest Surface: Sand

**Trailhead:**  
Normal Trailhead: 36 in (91 cm)  
Steepest Trailhead: 36 in (91 cm)  
Avg. Trailhead: 36 in (91 cm)  
Steepest Trailhead: 36 in (91 cm)  
Steepest Trailhead: 36 in (91 cm)



# Eisenhower Park Trails



# Eisenhower Park Trails

## A Trail Access Information Typical Trail Qualities

| Trail Name              | Length | Typical Grade | Maximum Grade<br>Standard Ramp is 8.3% | Typical Cross Slope | Maximum Cross Slope | Typical Tread Width | Minimum Clearance Width | Surface Type          |
|-------------------------|--------|---------------|--|---------------------|---------------------|---------------------|-------------------------|-----------------------|
| Red Oak Trail           | 0.5 mi | 7.1%          | 78 ft is 20% - 29%                     | 5.7%                | 78 ft is 20% - 22%  | 48 in               | 48 in                   | Aggregate / Gravel    |
| Shady Creek Trail       | 0.4 mi | 5.4%          | 66 ft is 15% - 29%                     | 4.4%                | 145 ft is 13% - 17% | 44 in               | 36 in                   | Aggregate / Gravel    |
| Cedar Flats Trail       | 0.8 mi | 4.3%          | 133 ft is 15% - 21%                    | 3.5%                | 87 ft is 9% - 10%   | 84 in               | 84 in                   | Asphalt               |
| Hillview Natural Trail  | 2.6 mi | 4.8%          | 353 ft is 21% - 37%                    | 3.5%                | 231 ft is 15% - 26% | 55 in               | 36 in                   | Crushed Stone (Fines) |
| Yucca Paved Trail       | 1.6 mi | 4.0%          | 67 ft is 21% - 39%                     | 3.3%                | 111 ft is 16% - 24% | 72 in               | 30 in                   | Wood Chip / Mulch     |
| Observation Tower Trail | 0.1 mi | 4.7%          | 124 ft is 11% - 17%                    | 2.9%                | 45 ft is 6%         | 96 in               | 96 in                   | Asphalt               |
| Live Oak Trail          | 0.1 mi | 4.5%          | 33 ft is 11% - 15%                     | 4.2%                | 65 ft is 10% - 19%  | 60 in               | 60 in                   | Wood Chip / Mulch     |

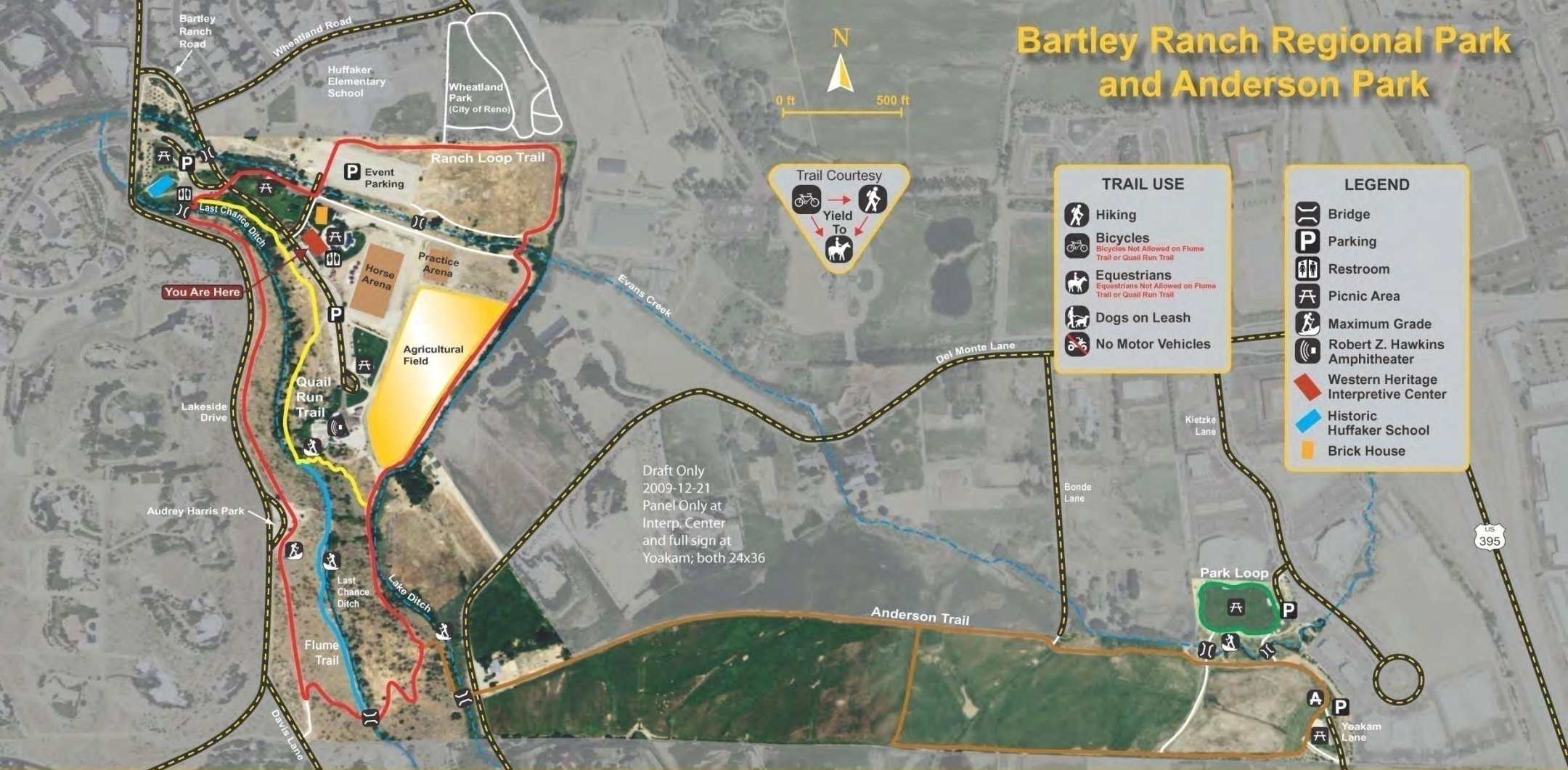


### WARNING:

Trail conditions may have changed since March 2011 when these trails were assessed. Signage created by Beneficial Designs Inc. using trail data collected by a certified trail assessment coordinator.

| Trail Name              | Length | Typical Grade | Maximum Grade       | Typical Cross Slope | Maximum Cross Slope | Typical Tread Width | Minimum Clearance Width | Surface Type          |
|-------------------------|--------|---------------|---------------------|---------------------|---------------------|---------------------|-------------------------|-----------------------|
| Red Oak Trail           | 0.5 mi | 7.1%          | 78 ft is 20% - 29%  | 5.7%                | 78 ft is 20% - 22%  | 48 in               | 48 in                   | Aggregate / Gravel    |
| Shady Creek Trail       | 0.4 mi | 5.4%          | 66 ft is 15% - 29%  | 4.4%                | 145 ft is 13% - 17% | 44 in               | 36 in                   | Aggregate / Gravel    |
| Cedar Flats Trail       | 0.8 mi | 4.3%          | 133 ft is 15% - 21% | 3.5%                | 87 ft is 9% - 10%   | 84 in               | 84 in                   | Asphalt               |
| Hillview Natural Trail  | 2.6 mi | 4.8%          | 353 ft is 21% - 37% | 3.5%                | 231 ft is 15% - 26% | 55 in               | 36 in                   | Crushed Stone (Fines) |
| Yucca Paved Trail       | 1.6 mi | 4.0%          | 67 ft is 21% - 39%  | 3.3%                | 111 ft is 16% - 24% | 72 in               | 30 in                   | Wood Chip / Mulch     |
| Observation Tower Trail | 0.1 mi | 4.7%          | 124 ft is 11% - 17% | 2.9%                | 45 ft is 6%         | 96 in               | 96 in                   | Asphalt               |
| Live Oak Trail          | 0.1 mi | 4.5%          | 33 ft is 11% - 15%  | 4.2%                | 65 ft is 10% - 19%  | 60 in               | 60 in                   | Wood Chip / Mulch     |

# Bartley Ranch Regional Park and Anderson Park



Draft Only  
2009-12-21  
Panel Only at  
Interp. Center  
and full sign at  
Yoakam; both 24x36

| Trail Name                  | Length | Typical Grade | Maximum Grade       | Typical Cross Slope | Maximum Cross Slope | Typical Trail Width | Minimum Clearance Width | Surface Type     | Surface Firmness |       | Surface Stability |       |
|-----------------------------|--------|---------------|---------------------|---------------------|---------------------|---------------------|-------------------------|------------------|------------------|-------|-------------------|-------|
|                             |        |               |                     |                     |                     |                     |                         |                  | Typical          | Worst | Typical           | Worst |
| Ranch Loop Trail            | 1.5 mi | 4.5%          | 371 ft is 16% – 25% | 2.8%                | 18 ft is 16% – 20%  | 90 in               | 40 in                   | Aggregate/Gravel | 0.19             | 0.22  | 0.36              | 0.60  |
| Quail Run Trail             | 0.4 mi | 7.3%          | 186 ft is 20% – 40% | 3.5%                | 46 ft is 18% – 30%  | 60 in               | 25 in                   | Aggregate/Gravel | 0.19             | 0.22  | 0.39              | 0.50  |
| Flume Trail                 | 0.2 mi | 4.6%          | 37 ft is 14% – 19%  | 3.9%                | 47 ft is 12% – 14%  | 48 in               | 20 in                   | Soil             | 0.23             | 0.25  | 0.38              | 0.49  |
| Anderson Trail (Round Trip) | 1.7 mi | 2.5%          | 196 ft is 14% – 21% | 2.4%                | 311 ft is 7% – 11%  | 76 in               | 48 in                   | Aggregate/Gravel | 0.19             | 0.22  | 0.39              | 0.52  |
| Park Loop                   | 0.2 mi | 1.6%          | 64 ft is 4% – 5%    | 1.8%                | 230 ft is 3% – 4%   | 84 in               | 84 in                   | Aggregate/Gravel | 0.18             | 0.19  | 0.37              | 0.43  |



**WARNING:** Trail conditions may have changed since September 2009 when these trails were assessed. Secondary trails are shown in white. Signage created by Beneficial Designs Inc. using data collected by a certified trail assessment coordinator.

**A** Trail Access Information



Funded by the Nevada Recreational Trails Program



# Lampe Park

Rough Draft Only  
2009-12-23  
1 at 24" x 36"  
Panel Only



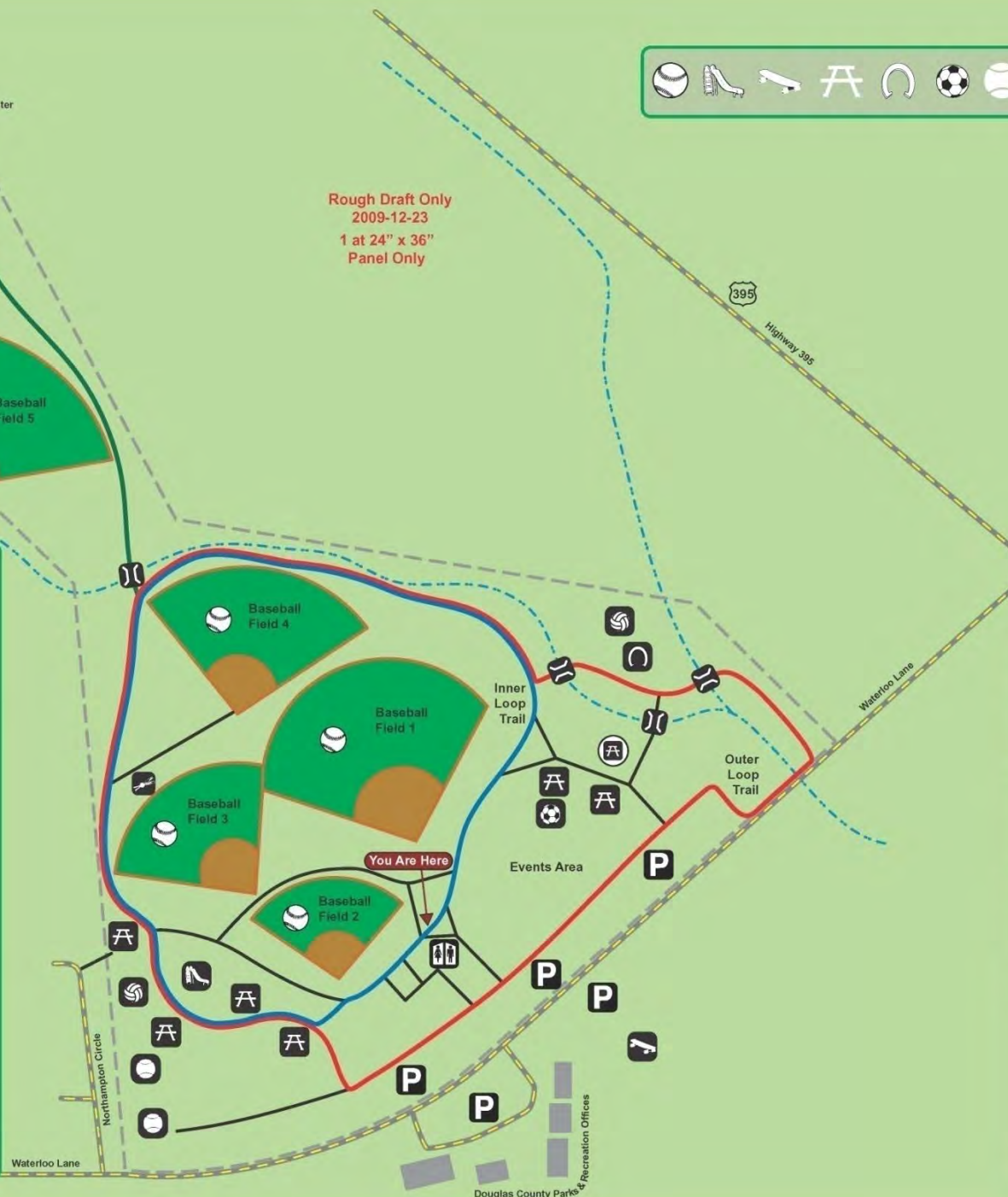
Funded by the Nevada Recreational Trails Program

## TRAIL USE

- Hiking
- Bicycles
- No Dogs
- No Equestrians
- No Motor Vehicles

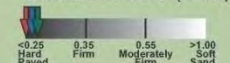
## LEGEND

- Bridge
- Parking
- Restroom
- Skate Park
- Playground
- Picnic Area
- Horseshoes
- Soccer Field
- Tennis Court
- Batting Cage
- Group Pavilion
- Sand Volleyball Court
- Park Boundary



| Trail Name                | Outer Loop Trail                   | Inner Loop Trail                   | Senior Center Trail                |
|---------------------------|------------------------------------|------------------------------------|------------------------------------|
| Length                    | 0.8 miles                          | 0.6 miles                          | 0.2 miles                          |
| Typical Grade             | 1.3%                               | 1.1%                               | 1.5%                               |
| Maximum Grade             | 17 feet is 5 – 8%                  | 41 feet is 3 – 5%                  | 27 feet is 5 – 6%                  |
| Typical Cross Slope       | 1.5%                               | 1.0%                               | 1.1%                               |
| Maximum Cross Slope       | 142 feet is 5 – 6%                 | 246 feet is 4 – 6%                 | 63 feet is 3 – 5%                  |
| Typical Tread Width       | 10 feet                            | 12 feet                            | 9 feet                             |
| Minimum Clearance Width   | 49 inches                          | 8 feet                             | 7 feet                             |
| Surface Type              | Decomposed Granite/Pavers          | Decomposed Granite/Pavers          | Decomposed Granite                 |
| Typical Surface Firmness  | 0.20 inches<br>(Worst 0.23 inches) | 0.20 inches<br>(Worst 0.23 inches) | 0.19 inches<br>(Worst 0.23 inches) |
| Typical Surface Stability | 0.26 inches<br>(Worst 0.33 inches) | 0.26 inches<br>(Worst 0.33 inches) | 0.28 inches<br>(Worst 0.33 inches) |

### Surface Firmness (inches)



### Surface Stability (inches)



**WARNING:** Trail conditions may have changed since July 2007 when these trails were assessed. Secondary trails are shown in black. Signage created by Beneficial Designs Inc. using data collected by a certified trail assessment coordinator.



Trail Access Information

## PRISON HILL RECREATION AREA · MOTORIZED USE AREA

## PERMITTED USES

- OHVs
- Equestrian
- Hiking
- Mountain Bikes
- Dogs Under Control of Owner

## LEGEND

- Main Parking Area
- Secondary Access Area
- Motorized Use Area
- Road
- Secondary Trail

Please do not create new routes.

Watch for rattlesnakes!

There are no water sources; carrying water is highly recommended!

There is a network of routes in the Prison Hill Recreation Area. For your safety and enjoyment, and for the protection of natural resources, only primary routes are mapped and identified.



Funded by the Nevada Recreational Trails Program

## A TRAIL



0 mi 0.25 mi

WARNING: Trail conditions may have changed since September 2013 when these trails were assessed. Signage created by Beneficial Designs Inc. using trail data collected by a certified trail assessment coordinator.

## PERMITTED USES

- OHVs
- Equestrian
- Hiking
- Mountain Bikes
- Dogs Under Control of Owner

## LEGEND

- Main Parking Area
- Secondary Access Area
- Motorized Use Area
- Road
- Secondary Trail

Please do not create new routes.

Watch for rattlesnakes!

There are no water sources; carrying water is highly recommended!

There is a network of routes in the Prison Hill Recreation Area. For your safety and enjoyment, and for the protection of natural resources, only primary routes are mapped and identified.

No Motorized Use

Highest Point  
5724 ft



ACCESS INFORMATION



| Vehicle Use              | Length | Typical Grade | Maximum Grade<br>Standard Ramp is 6.3% | Typical Cross Slope |
|--------------------------|--------|---------------|--|---------------------|
| Motorcycle Loop          | 6.0 mi | 12.6%         | 182 ft is 45% - 65%                    | 4.8%                |
| Motorcycle/ATV Loop      | 1.6 mi | 7.9%          | 38 ft is 40% - 51%                     | 6.3%                |
| Motorcycle Trail         | 1.6 mi | 12.5%         | 278 ft is 25% - 42%                    | 5.8%                |
| Motorcycle/ATV/Jeep Loop | 6.6 mi | 10.9%         | 149 ft is 35% - 37%                    | 4.2%                |

WARNING: Trail conditions may have changed since September 2013 when these trails were assessed. Signage created by Beneficial Designs Inc. using trail data collected by a certified trail assessment coordinator.



[HOME](#) [ABOUT US](#) [DEFINITIONS](#) [LINKS](#) [TRAIL ACCESS INFORMATION](#)

#### [TRAIL FEATURES](#)

Customize your search by trail use and features.

#### [TRAIL ACCESS](#)

Find a trail to suit your ability. Search by grade, cross-slope and surface.

#### [TRAIL MANAGEMENT](#)

Authorized trail managers may add or edit trail information. Contact [Beneficial Designs](#).

#### [CONTACT US](#)



#### **QUICK TRAIL SEARCH**



Type in (a few letters of) a park or trail name:

**GO**

**OR**

View trails by state:

**GO**

#### **PICK OF THE MONTH**



Big Basin Redwoods State Park  
Boulder Creek, CA

Features 2,000 year-old redwoods and over 50 miles of trails. Reservations required for camping. Phone: 831.338.8860

Have you ever finished a three hour hike in one hour? Have you struggled on a "moderate" trail? Have you ever encountered barriers on an "easy" trail? If so, you already know the benefits of having objective trail information. The Trail Explorer website conveys objective trail information in a unique [Trail Access Information](#) format to help trail users make informed decisions about which public lands to visit, and which trails will best meet their interests, abilities and desired experiences. Trail Explorer benefits all users, but is particularly helpful for individuals who may have specific trail needs, such as individuals with disabilities, older adults, parents with young children, and novice hikers.

#### **Acknowledgement**

Trail Explorer was designed by [Beneficial Designs](#) in collaboration with [American Trails](#), land management, and disability organizations and with the support of the US Department of Education.

[home](#) | [about us](#) | [definitions](#) | [trail access information](#)  
[links](#) | [acknowledgments](#) | [disclaimer](#)

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# Internet

# www.triaexplorer.org

**Who benefits from objective  
Trail Access Information  
(TAI)?**

People with  
Disabilities



Users with limited  
experience

**Everyone benefits from TAI!**



Children

Adults who  
are older or  
less fit



# User Benefits from TAI

Consistent information

Increased independence,  
safety, opportunities and  
enjoyment

Responsible and informed  
trail selection

Knowledge of actual  
conditions



# Land Manager Benefits

Increased user safety  
and satisfaction

Provide more trail  
opportunities

Monitoring of  
environmental impact



# Land Manager Benefits

Identification of work priorities

Enhanced planning & budgeting of projects

Enhanced search and rescue

Provides information for GIS (When use GPS)



# Assessment and Compliance

Inventory existing facilities and infrastructure

Determine compliance with existing ADAAG and Developed Outdoor Recreation facilities

Create transition plan with goals and objectives for accomplishing access

# UTAP in Use

Over 1,040 individuals trained

Federal, state and local trail  
management agencies

US, Canada, and other countries

# HETAP in Use

Florida State Parks

Cities of Edmonton, Alberta and  
Toronto, Ontario

National Park Service-SW Region

San Antonio Parks and Recreation

Beneficial Designs, Inc.

# Overview Summary

Lack of information is the greatest barrier to access

UTAP/HETAP is objective, valid, repeatable and related to user perceptions

Generates and conveys all types of information for all types of trails

Benefits all users and land managers

Focuses on grade, cross slope, surface, width and features

Generates a complete inventory for Asset Management

Beneficial Designs, Inc.

Minden, Nevada

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*Working toward universal access  
through research, design & education*